

**CLAIMS**

1. A transmission system for a measurement device for  
5 a coordinate positioning apparatus comprising:  
    a first station for mounting with one of the  
    measuring device and the coordinate positioning  
    apparatus;  
    a second station for mounting with the other of  
10 the measuring device and the coordinate positioning  
    apparatus;  
    wherein the first and second stations communicate  
    using a spread spectrum radio link.
- 15 2. A transmission system according to claim 1 wherein  
    the first and second stations frequency hop between  
    different frequencies.
3. A transmission system according to any preceding  
20 claim wherein the measurement device is a measurement  
    probe.
4. A transmission system according to claim 3 wherein  
    the measurement probe is a touch trigger probe.
- 25 5. A transmission system according to claim 3 wherein  
    the measurement probe is a scanning probe.
6. A transmission system according to any preceding  
30 claim wherein the transmission system uses a worldwide  
    licence free radio frequency band.
7. A transmission system according to any preceding  
    claim wherein the first and second stations are

provided with a clock and wherein the clocks are synchronised at least once.

8. A transmission system according to claim 7 wherein  
5 the first station transmits a regular transmission and wherein when the second station receives the signal it will synchronise its clock with the first station.

9. A transmission system according to claim 8 wherein  
10 the first and second stations frequency hop between different frequency channels and wherein when the first and second stations are synchronised, their frequency hopping is synchronised.

15 10. A transmission system according to any preceding claim wherein in the event of a measurement event, the first station may transmit information relating to said measurement event.

20 11. A transmission system according to claim 10 wherein said measurement event is a touch trigger event.

12. A transmission system according to claim 10  
25 wherein said measurement event is position measurement.

13. A transmission system according to any of claims 10 to 12 wherein said information includes data relating to the time of the measurement event.

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14. A transmission system according to any of claims 9-12 wherein the first station transmits a regular transmission and wherein information relating to the measurement event is transmitted in an additional

transmission.

15. A transmission system according to any of claims  
10-13 wherein in the event of receiving a transmission  
5 from the second station, a measurement event is  
performed and the first station transmits data relating  
to said measurement event.

16. A transmission system according to claim 1  
10 wherein:

the measurement device comprises a touch trigger  
probe;

the first and second stations hop between a series  
of different frequency channels;

15 wherein the first station transmits a regular  
signal and wherein if the second station receives the  
signal it will synchronise with the first station;  
and wherein in the event of a touch trigger event,  
the first station may transmit an additional signal  
20 which includes data relating to the time of the touch  
trigger event and wherein the second station is  
provided with means for receiving said data  
representing the time and providing a probe output  
signal derived therefrom.

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17. A transmission system according to any preceding  
claim wherein if a signal transmitted by the first  
station is not adequately received by the second  
station, the signal is retransmitted by the first  
30 station.

18. A transmission system according to claim 17  
wherein if the second station receives the signal  
transmitted by the first station, it transmits an

acknowledgement signal and if the first station does not receive an acknowledgement signal in response to its signal, it will re-transmit said signal.

5 19. A transmission system according to any preceding claim wherein the transmission system comprises a half duplex link.

10 20. A transmission system according to any preceding claim wherein when a signal transmitted by the first station contains information relating to the measurement device, the measurement device output signal in the second station is produced after a time delay.

15 21. A transmission system according to claim 20 wherein the time delay is chosen so that it is long enough to allow retransmissions of the signal within the time delay.

20 22. A transmission system according to any preceding claim wherein a master clock is provided at one end of the transmission system and a sliding correlator is provided to recover the master clock.

25 23. A transmission system according to any of claims 19-21 wherein a master clock is provided at one end of the transmission system and wherein the master clock provides a reference for the measurement device output  
30 signal time delay.

24. A transmission system according to claim 22 wherein if the second station receives a signal from the first station it transmits an acknowledgement

signal and wherein the acknowledgement signal is synchronised with the master clock.

25. A transmission system according to any preceding  
5 claim wherein a signal sent between the first and second stations comprises data bits and wherein data bits relating to more important information are provided with greater error protection than other data bits.

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26. A transmission system according to claim 25 wherein the data bits relating to more important information may be provided with a higher hamming distance than other data bits.

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27. A transmission system according to any preceding claim wherein the first station transmits regular signals and wherein the first station has a mode and wherein each regular signal asks if the first station  
20 should change mode, and wherein if the first station receives an affirmative response, it changes mode.

28. A transmission system according to any preceding claim wherein if the first and second stations are not  
25 synchronised, the first and second stations will hop between frequency channels at different rates until the second station receives a signal and synchronises with the first station.

30 29. A transmission system according to any preceding claim wherein if the second station detects background noise above a predetermined level on the selected frequency channel, it will change to a different frequency channel.

30. A transmission system according to any preceding claim wherein the first station has an ID code and wherein the second station can be set to only communicate with the said first station having said ID  
5 code.

31. A transmission system according to any preceding claim wherein the first station is provided with a mode in which it transmits a signal containing its ID code  
10 and the second station is provided with a mode in which on receiving said signal, it is set to only communicate with the first station having this ID code.

32. A transmission system for a measurement probe for  
15 a coordinate positioning apparatus, comprising:

a first station for mounting with one of the measuring device and the coordinate positioning apparatus;

a second station for mounting with the other of  
20 the measuring device and the coordinate positioning apparatus;

wherein the first and second stations may communicate on different frequency channels and wherein if the second station hears significant noise on a  
25 certain frequency channel, it will hop to another frequency channel.

33. A transmission system according to claim 32 wherein the measurement probe is a touch trigger probe.